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On

"Gridlock on the National Forests"

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Good afternoon Mr. Chairman and members of the subcommittee. Thank you for the invitation to appear and testify today. I am going to focus my remarks on two national forest management practices that Congress sometimes hears characterized as unduly delayed by existing laws and regulations, particularly procedural requirements like those of the National Environmental Policy Act (NEPA). These practices are thinning for fire risk reduction and post-fire salvage logging. Both practices are full of uncertainties and each has the potential, at least, to do more harm than good. Both need thorough review of site-specific factors and candid assessment of their downside risks on a case-by-case basis. Both need very careful monitoring and long-term evaluation if we are not to remain ignorant of how, if at all, to keep them from backfiring.

In general, therefore, these activities are not good candidates for procedural streamlining, let alone exemption from existing laws and regulations. This does not mean, however, that there is no room for improvement in how they are conducted. The Forest Service can expedite thinning projects, in particular, by focusing on the least controversial areas and practices. Congress can help by insisting that the agency devote its resources to the immediate vicinity of communities, where potential benefits from fire risk reduction are greatest and risks to residual natural values generally lowest. Congress can also assist by ensuring that the Forest Service and its sister agencies have the staff and resources to comply fully and swiftly with existing procedural safeguards, and a mandate to conduct thinning as an experiment that must be carefully designed, monitored, and evaluated for its actual results and impacts. And Congress can encourage the Forest Service, to the extent that it identifies redundant processes, to combine them under the general umbrella of NEPA review.

Forest Thinning and Environmental Review

I will turn first to forest thinning aimed at reducing fire risks. There is surprisingly little scientific information about how thinning actually affects overall fire risk in national forests. Because of this, thinning projects need very careful design, location, execution, monitoring, and evaluation.

Most importantly, virtually no peer-reviewed, empirical studies show that thinning forests in fact leads to a systematic reduction of subsequent fire intensity.[(1)] The Forest Service's Cohesive Strategy acknowledges this, noting that "[a]t landscape scales, the effectiveness of treatments in improving watershed conditions has not been well documented."[(2)] And a series of studies - though certainly not definitive - shows post-thinning increases in fire

intensity and/or spread.[3] Anecdotal cases exist both ways: some thinned forests have burned hotter than their surroundings and some have burned cooler. But why that is so is the subject more of hypothesis than of factual evidence.

How can it be that thinning could increase fire risks? First, thinning lets in sunlight and wind, both of which dry out the forest interior and increase flammability. Second, the most flammable material - brush, limbs, twigs, needles, and saplings - is difficult to remove and often left behind. Third, opening up forests promotes brushy, flammable undergrowth. Fourth, logging equipment compacts soil so that water runs off instead of filtering in to keep soils moist and trees healthy. Fifth, thinning introduces diseases and pests, wounds the trees left behind, and generally disrupts natural processes, including some that regulate forest health, all the more so if road construction is involved.

Undoubtedly, part of the reason the impacts of thinning are so hard to predict is that the historical conditions it seeks to recreate varied from site to site in ways we do not understand all that well. The notion that the Interior West was once blanketed with widely spaced trees subject to uniformly frequent and cool ground fires, used as an argument in favor of wholesale thinning today, is an extravagant over-simplification. As a general matter, it is problematic to extrapolate just how dense or sparse forests actually were in pre-settlement times.[4] We do know that some specific representations of widely spaced trees in the pre-settlement West are wrong.[5] We also know that pre-settlement fires burned with variable intensity.[6] How frequently even dry pine sites burned is scientifically controversial.[7] And both the density of trees and the natural, sustainable intensity of the fires they experienced surely varied with such factors as the elevation, the directional orientation, the moisture regimes, and the landscape position of forests. Thinning projects therefore raise a series of site-specific issues about what conditions are being mimicked and why.

Does this mean that we should not try to reduce fire intensity with thinning? Not at all. However, it does mean that thinning is not an established cure for intense fire that we can apply routinely without careful planning and evaluation. Rather it is an experiment that can backfire, one that we do not understand well and that badly needs existing procedural safeguards

Long-term implications of Salvage Logging

More scientific research exists about the actual impacts of post-fire, or "salvage," logging. Yet here, too, current laws and regulations are critical for minimizing harm to the long-term integrity and productivity of our forests, and loss of the public values for which they are to be managed. Great care is needed in part, Forest Service researchers have concluded, because salvage logging spreads exotic species, causes erosion, and reduces wildlife usage, among other harms.[8] Post-fire soils are particularly susceptible to logging damage and associated loss of productivity.[9] Scientists both inside and outside the Forest Service agree there is little or no evidence that post-fire logging reduces the risk of later reburn, and warn that site-specific factors are critical in assessing the impacts of salvage logging.[10] All of this means that, as with thinning, it is very risky to streamline procedures for planning and evaluating salvage projects.

Consequence of Forest Management Without Environmental Review

When considering the need for review and evaluation of pre- and post-fire management projects, Congress should bear in mind how national forests came to need remedial attention. Forest health problems are the direct result of past management decisions and practices that were mostly adopted by the U.S. Forest Service without benefit of NEPA review. For example, while it is sometimes argued that the agency could not have known that fire suppression would create more intense subsequent fires, as early as 1930 the Journal of Forestry published a report by one of the agency's forest supervisors detailing exactly this consequence of aggressive fire suppression.[11] Had environmental review been required at that point, the wildfire-promoting aspects of fire suppression and of other

management practices like grazing[(12)] and logging[(13)] would have been examined and could have been avoided or mitigated long before they reached current dimensions. In some measure this is what happened at the National Park Service.

To this day, Forest Service management threatens to aggravate the conditions most often cited as justifying shortcuts in project review and evaluation. In particular, the agency combines restoration projects with commercial logging even though the two kinds of projects have diametrically opposite priorities. The small trees associated with heightened fire risks in some places, i.e. those that were established only after management changed fire regimes, are not commercially valuable. Conversely, the larger and more commercially valuable that logged trees are, the more logging resembles the practices that contributed to increased fire risk in the first place. A companion problem is the continued uncritical focus of the National Fire Plan on massive, broadscale fire supression, despite uniform acknowledgement that "decades of fire exclusion"[(14)] have heightened fire risks.

Possibilities for Expediting Forest Management

Can anything be done to simplify and expedite Forest Service management of the kind of projects we're talking about? The answer is unequivocally yes.

Most readily, the agency can focus its energies on less controversial areas and projects. As a first priority, forest communities need assistance with the kind of drastic thinning in the immediate vicinity of structures that, though it does not leave a functioning forest, does in fact make the spread of flames to houses difficult, especially if they are retrofitted with fire resistance siding and roofs.[(15)]

As a second priority, there is an abundance of small diameter thinning that can be tried in the developed forest matrix that has been most modified by past management and thus is most likely to suffer from altered fire regimes. If this work is targeted to the specific slopes where dry forests once predominated, designed with size limits,[(16)] couch projects in heavily altered landscapes.

Third, Congress can and should provide the direction and funding for vigorous environmental review, monitoring, and subsequent evaluation of the kinds of thinning projects described above. We need to understand that failure to assess such projects fully and design them intelligently and conservatively may well make fire risks, and the associated costs - economic, environmental, and human - of firefighting, greater not less.

And finally, Congress can and should urge the Forest Service to build on existing authorities to fold parallel procedural requirements into the NEPA process. The Council on Environmental Quality regulations already encourage such overlap.[(17)]

What should Congress not do or allow? It should not allow the agency to confuse commercial logging with restoration, given their opposite incentives. It should prohibit the agency from wasting resources, time, and credibility conducting extensive and controversial "restoration" projects far away from communities. This is especially true of roadless and other sensitive areas, most of which have seen the least damage precisely because they have thus far been the least managed. It should not allow the Forest Service to shortchange NEPA, which is precisely the mechanism with the best chance of bringing into the light of day the risks of and counter-indications for treatments that may ultimately have the opposite of the desired result. And it should not dispense with or allow the agency to undercut administrative appeal rules, rules which are an essential part of public participation and public trust in agency decisionmaking, and which do not entail delays outside of the Forest Service's control of more than two months.[(18)]

Thank you for the opportunity to testify today. I would be happy to

answer any questions you might have.

1.

[i] There are numerous models and assessments that predict what future fire intensity might be, but they do not report the actual near or long-range results of thinning as conducted under real world conditions. Similarly common are studies that look at occurrence and acreage of fire without considering intensity. However, thinning does not aim to reduce burning overall, indeed lack of low-intensity burning is seen as part of the problem with national forests. Rather, the postulated function of thinning is to make fires less intense. Thus, studies that ignore intensity do not provide useful information about the effectiveness of thinning. One masters degree thesis appears to provide a lone exception to this dearth of relevant research. Pollet, J., and Omi, P.N. 1999. *Effect of thinning and prescribed burning on wildfire severity in ponderosa pine forests*. Paper presented at the JFSC Fire Conference, "Crossing the Millennium: Integrating Spatial Technologies and Ecological Principles for a New Age in Fire Management." Boise, Idaho.

2.

[ii] U.S. Forest Service. 2000b. *Protecting People and Sustaining Resources in Fire-Adapted Ecosystems: A Cohesive Strategy*. Oct. 13, 2000.

3.

[iii] Many of these studies were reviewed by the Forest Service in connection with the Final Environmental Impact Statement for the Roadless Areas Conservation Rule (FEIS). The fire specialist review of scientific literature for the FEIS summarizes their findings. See FEIS, Fuel Management and Fire Suppression Specialist's Report, http://www.roadless.fs.fed.us/documents/feis/specrep/xfire_spec_rpt.pdf at 22 ("The Congressional Research Service … noted: 'timber harvesting does remove fuel, but it is unclear whether this fuel removal is significant;'" "Covington (1996) … notes that, 'scientific data to support such management actions [either a hand's off approach or the use of timber harvesting] are inadequate'" (brackets in the source)); id. at 22-23 ("Kolb and others (1994) … conclude that … management activities to improve forest health [such as fuel management] are difficult to apply in the field" (brackets in the source)); id. at 21 ("Fahnstock's (1968) study of precommercial thinning found that timber stands thinned to a 12 feet by 12 feet spacing commonly produced fuels that 'rate high in rate of spread and resistance to control for at least 5 years after cutting, so that it would burn with relatively high intensity;'" "When precommercial thinning was used in lodgepole pine stands, Alexander and Yancik (1977) reported that a fire's rate of spread increased 3.5 times and that the fire's intensity increased 3 times"); id. at 23 ("Countryman (1955) found that 'opening up' a forest through logging changed the 'fire climate so that fires start more easily, spread faster, and burn hotter"). See also Huff, M.H., R.D. Ottmar, E. Alvarado, R.E. Vihnanek, J.F. Lehmkuhl, P.F. Hessburg, and R.L. Everett. 1995. *Historical and current landscapes in eastern Oregon and Washington. Part II: linking vegetation characteristics to potential fire behavior and related smoke production*. U.S. Forest Service Pacific Northwest Forest and Range Experiment Station, GTR-355. Portland, Oregon; U.S. Forest Service. 1995. *Initial review of silvicultural*

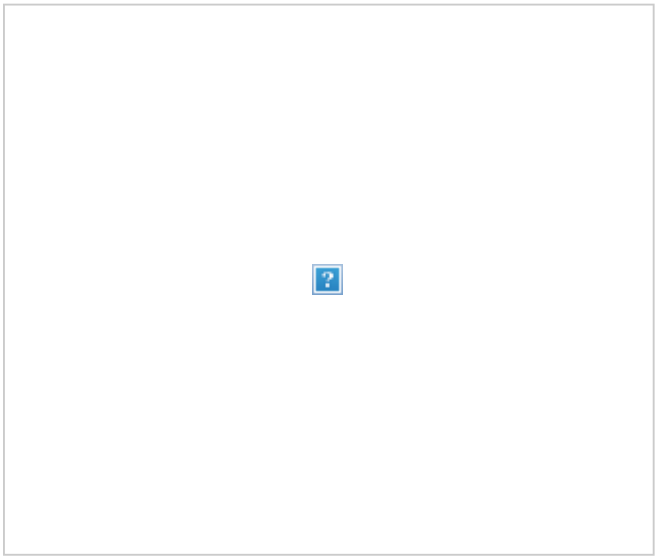
treatments and fire effects on Tyee fire. Appendix A, Environmental Assessment for the Bear-Potato Analysis Area of the Tyee Fire, Chelan and Entiat Ranger Districts, Wenatchee National Forest, Wenatchee, WA. 5 pages.

4.

[iv] Stephenson, N.L. 1999. *Reference conditions for Giant Sequoia forest restoration: structure, process, and precision.* Ecological Applications. 9: 1253-1265; Landres, P.B., Morgan, P., and Swanson, F.J. 1999. *Overview of the use of natural variability concepts in managing ecological systems*. Ecological Applications 9: 1179-1188.

5.

[v] The Forest Service's long-time poster child for supposedly pre-management open stand conditions in the dry West is this 1909 photograph from the Bitterroot National Forest. See Figure 1.



The photo in Figure 1 actually is of a just-logged stand. See Gruell, G.E. 1983. *Fire and Vegetative Trends in the Northern Rockies: Interpretations from 1871-1982 Photographs*. U.S. Forest Service, Intermountain Forest and Range Experiment Station GTR INT-158. Ogden, UT. Figure 2 is a genuine pre-logging photo from the same area and year, showing much closer spaced trees. Arno, S.F., J.H. Scott, and M.G. Hartwell. 1995. *Age-class Structure of Old Growth Ponderosa Pine/Douglas-fir stand and its relationship to fire history*. U.S. Forest Service, Intermountain Research Station GTR INT-RP-481. Ogden, UT.

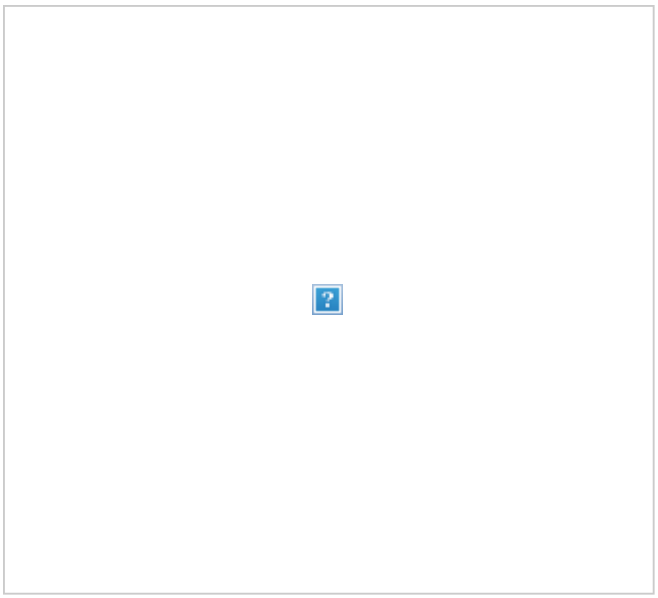


Figure 1 was presented as an illustration of desirable, baseline conditions in a widely distributed 1998 Forest Service poster and in the first, i.e. May 31, 2000, edition of the agency's Coherent Strategy document. The General Accounting Office also included it in ***Western National Forests: A Cohesive Strategy is Needed to Address Catastrophic Wildfire Threats***. U.S. GAO. 1999. Report no. GAO/RCED-99-65.

6. [vi] Morrison, P.H and Swanson, F.J. 1990. *Fire history and pattern in a Cascade Range landscape*. U.S. Forest Service Pacific Northwest Forest and Range Experiment Station, PNW-GTR-254. Portland, Oregon.

7.

[vii] Baker, W.L. and D. Ehle. 2001. *Uncertainty in surface-fire history: the case of ponderosa pine forests in the western United States*. Can. J. For. Res. 31: 1205-1226.

8.

[viii] McIver, J. D., and L. Starr, tech eds, 2000. *Environmental Effects of Postfire Logging: Literature Review and Annotated Bibliograph*. U.S. Forest Service, Pacific Northwest Research Station PNW-GTR-486. Portland, OR.

9.

[ix] Beschta, R.L, et al. 1995. *Wildfire and Salvage Logging*. Oregon State University. Corvallis, OR.

10.

[x] See McIver, J.D. and L. Starr, supra note 8 ("postfire logging is certain to have a wide variety of effects, from subtle to significant, depending on where the site lies in relation to other postfire sites of various ages, site characteristics, logging methods, and intensity of fire"); see also Beschta et al., supra note 9; Everett, R. 1995. *Review of Beschta document*. Letter dated August 16 to John Lowe. On file with: U.S. Forest Service, pacific Northwest Research Station, Wenatchee, WA.

11.

[xi] Benedict, M.A. [Supervisor of the Sierra National Forest]. 1930. *Twenty-one years of Fire Protection in the National Forests of California*. Journal of Forestry 28: 707-710.

12.

[xii] Belsky, A.J. and D. Blumenthal. 1997. *Effects of Livestock Grazing on stand Dynamics and Soils in Upland Forests of the Interior West*. Conservation Biology 11:315-327.

13.

[xiii] See supra note 3, and accompanying text.

14.

[xiv] Compare http://www.na.fs.fed.us/nfp/ff/ff_overview_text.htm with http://www.na.fs.fed.us/nfp/hazfuel/reports/brief_nfp_keypoint_hazfuel_032301.htm . Some fire suppression is, of course, essential. Missing from the National Fire Plan, however, is any awareness that ultimately all forests in the lower 48 states burn and that for those that naturally burn frequently, putting out small fires aggressively, rather than allowing some burning, stores up bigger problems for later on. The 10-Year Comprehensive Strategy, supra note 1, does show some awareness that restoration of fire is an integral part of the challenge faced in our Nation's forests.

15.

[xv] Cohen, Jack. 1999. *Reducing the Wildland Fire Threat to Homes: Where and How Much?* In proceedings of the Symposium on Fire Economics, Planning, and Policy: bottom lines; 1999 April 5-9. San Diego, CA; Gonzales-Caban, Armando; Omi, Philip N., technical coordinators. U.S. Forest Service Pacific Southwest Research Station Gen. Tech. Rep. PSW-GTR-173. Albany, CA.

16.

[xvi] See, e.g., National Park Service. 2001. *Environmental Assessment, Hazard Fuel Reduction and Site Restoration, Sequoia & Kings Canyon National Parks, East Fork Kaweah Developed Areas, Oriole Lake and Silver City*. Environmental Compliance Document #2001-19. Three Rivers, CA. This project uses hard and fast criteria that preserve all trees over 40 feet high and all down logs over 8 inches in diameter.

17.

[xvii] 15 C.F.R. §1506.4.

18.

[xviii] Compare 36 C.F.R. § 215.13(a) with 36 C.F.R. § 215.10(b).